Fig. 1

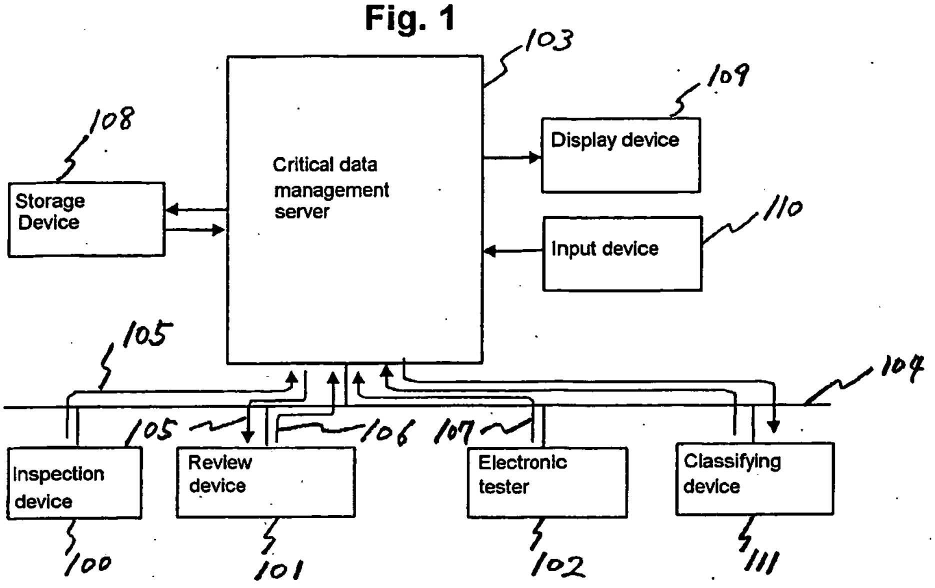

Critical data management server
Display device
Storage Device
Input device
Inspection device
Review device
Electronic tester
Classifying device

Fig. 3

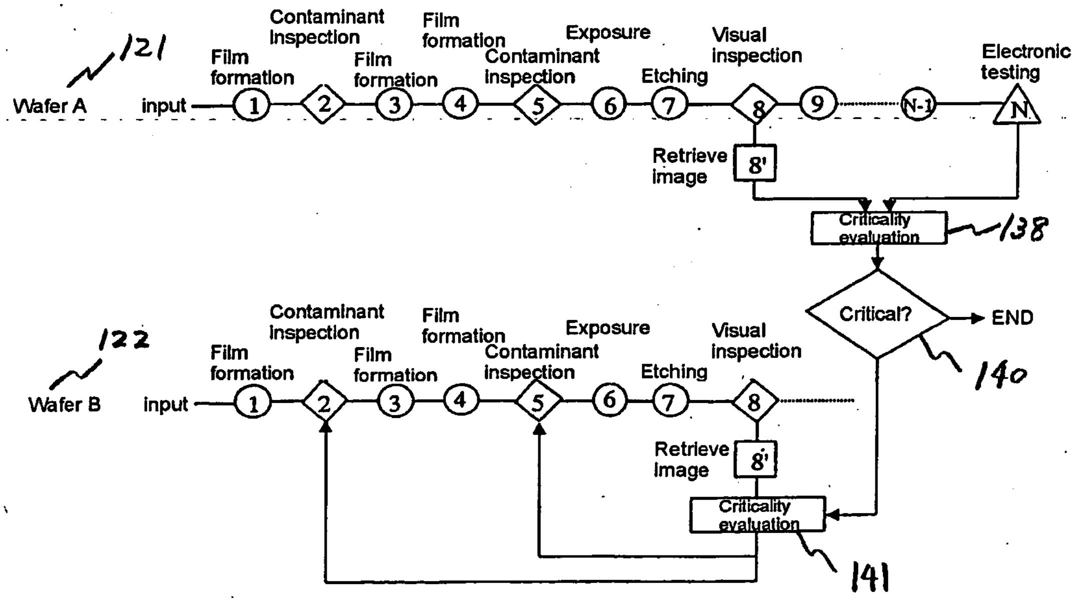

121
Wafer A
input
Film formation
Contaminant inspection
Film formation
Film formation
Contaminant inspection
Exposure
Etching
Visual inspection
Electronic testing
1
2
3
4
5
6
7
8
9
N-1
N
Retrieve image
8'
Criticality evaluation
138
Critical?
END
140
122
Wafer B
input
Film formation
Contaminant inspection
Film formation
Film formation
Contaminant inspection
Exposure
Etching
Visual inspection
1
2
3
4
5
6
7
8
Retrieve image
8'
Criticality evaluation
141

Fig. 2

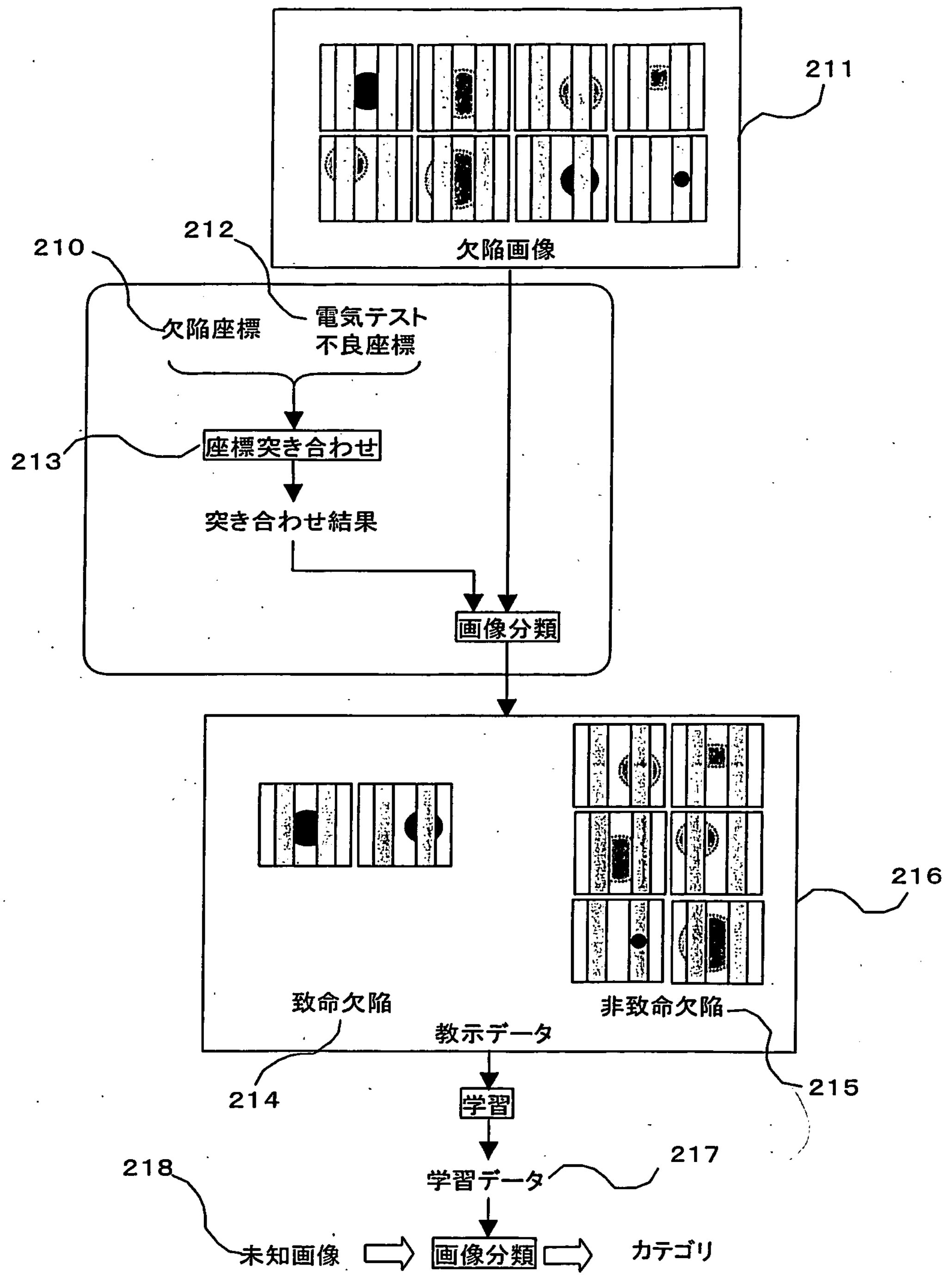
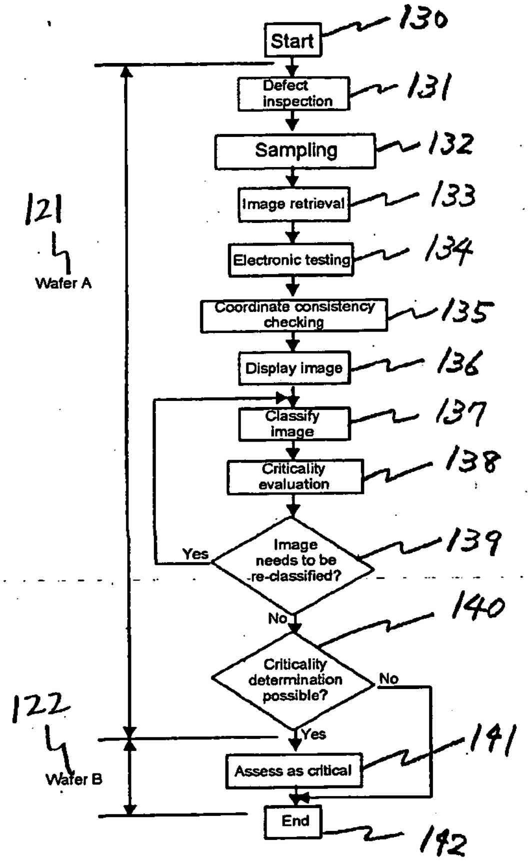
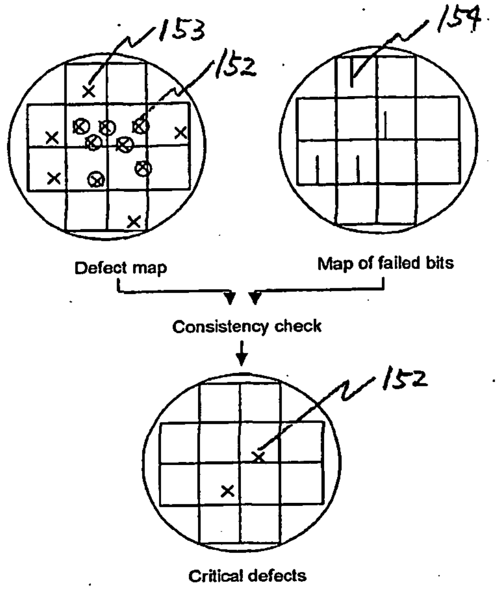

211
欠陥画像
210
212
欠陥座標
電気テスト
不良座標
213
座標突き合わせ
突き合わせ結果
画像分類
216
致命欠陥
非致命欠陥
教示データ
214
215
学習
学習データ
217
218
未知画像
画像分類
カテゴリ

Fig. 4


Start
130
Defect inspection
131
Sampling
132
Image retrieval
133
Electronic testing
134
Coordinate consistency checking
135
Display image
136
Classify image
137
Criticality evaluation
138
Image needs to be re-classified?
139
Yes
No
Criticality determination possible?
140
No
Yes
Assess as critical
141
End
142
121
Wafer A
122
Wafer B

## Fig. 5

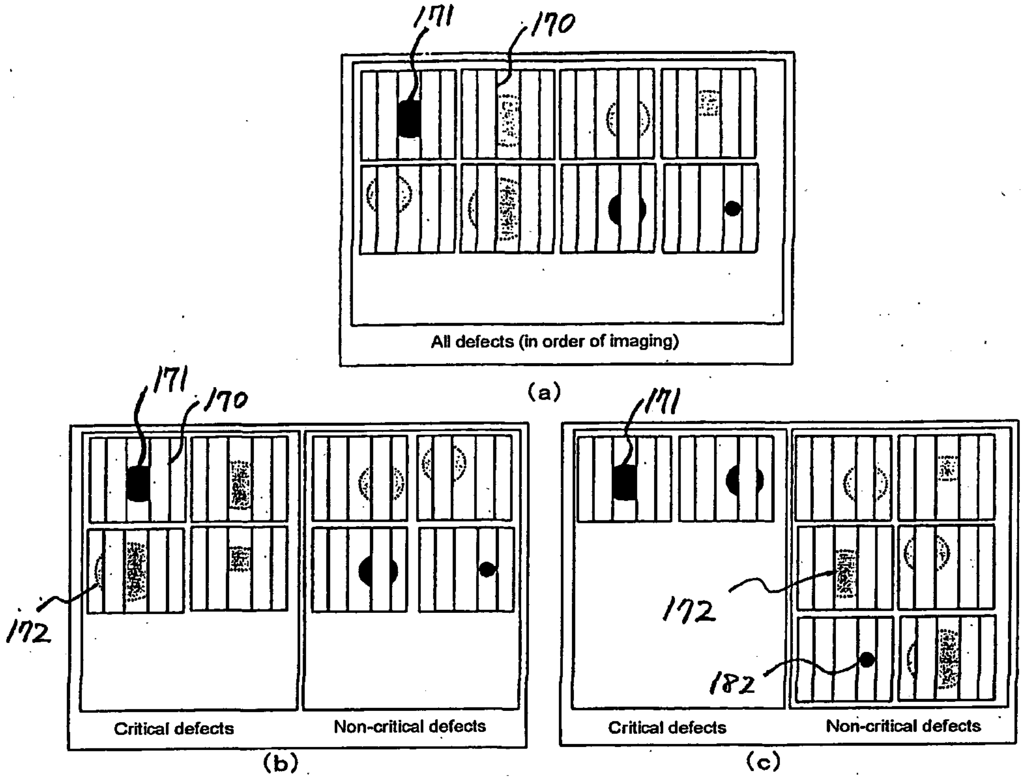

153
152
154
Defect map
Map of failed bits
Consistency check
152
Critical defects

## Fig. 6

160 161 162 163 164 165

| Defect number | Chip coordinates | Defect coordinates | Sampling flag | Image name | Test result |
|---|---|---|---|---|---|
| 1 | (2,0) | (ΔX1, ΔY1) | 0 | | G |
| 2 | (0,1) | (ΔX2, ΔY2) | 0 | | G |
| 3 | (1,1) | (ΔX3, ΔY3) | 1 | image3 | N |
| 4 | (2,1) | (ΔX4, ΔY4) | 1 | image4 | N |
| 5 | (0,2) | (ΔX5, ΔY5) | 0 | | G |
| 6 | (1,2) | (ΔX6, ΔY6) | 1 | image6 | G |
| 7 | (1,2) | (ΔX7, ΔY7) | 1 | image7 | G |
| 8 | (1,2) | (ΔX8, ΔY8) | 1 | image8 | G |
| 9 | (2,2) | (ΔX9, ΔY9) | 1 | image9 | N |
| 10 | (2,2) | (ΔX10, ΔY10) | 1 | image10 | N |
| 11 | (3,2) | (ΔX11, ΔY11) | 0 | | G |
| 12 | (1,3) | (ΔX12, ΔY12) | 0 | | N |

# Fig. 7

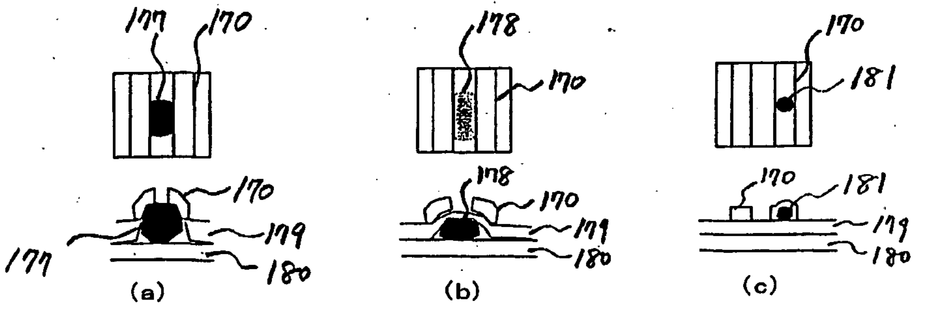

171
170
All defects (in order of imaging)
171
170
172
Critical defects
Non-critical defects
171
172
182
Critical defects
Non-critical defects

(a)

(b)

(c)

# Fig. 9

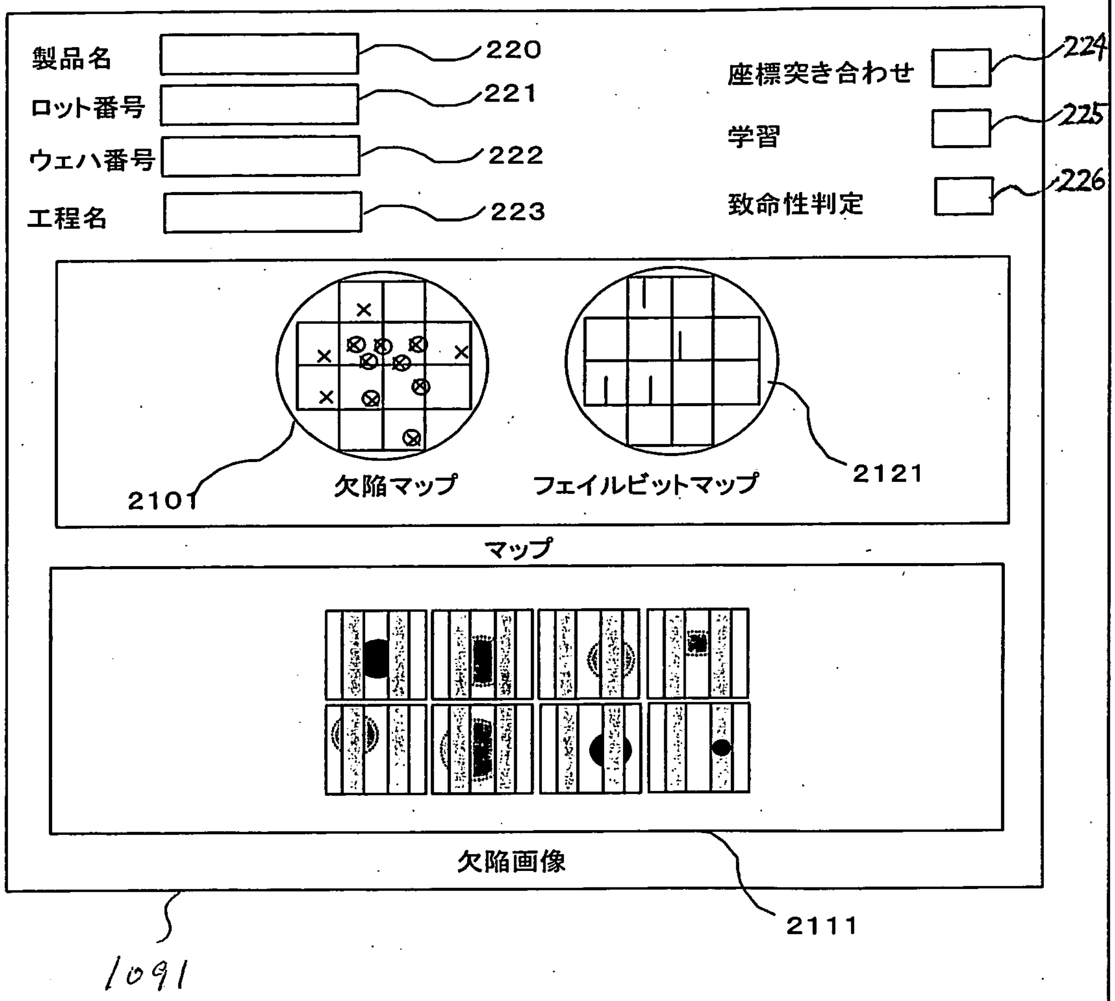

177
170
170
179
177
180
178
170
178
170
179
180
170
181
170
181
179
180

(a)

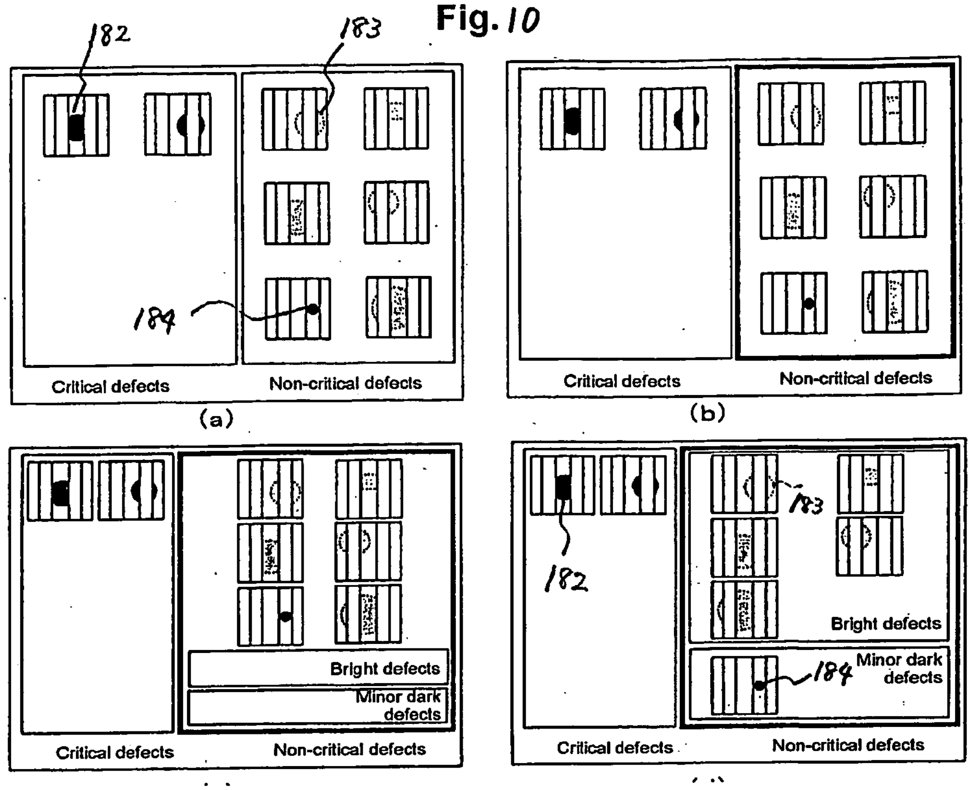
(b)

(c)

Fig. 8


製品名
220
ロット番号
221
ウェハ番号
222
工程名
223
座標突き合わせ
224
学習
225
致命性判定
226
欠陥マップ
2101
フェイルビットマップ
2121
マップ
欠陥画像
2111
1091

## Fig. 10

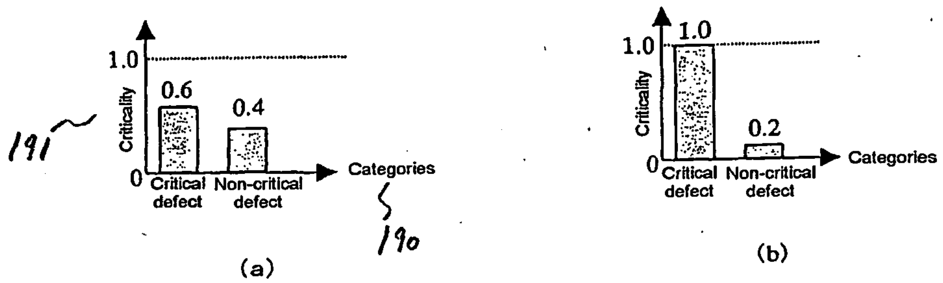

182
183
184
Critical defects
Non-critical defects
Critical defects
Non-critical defects
Bright defects
Minor dark defects
Critical defects
Non-critical defects
183
182
Bright defects
184
Minor dark defects
Critical defects
Non-critical defects

(a) (b)

## Fig. 11

| 160 | 161 | 162 | 163 | 164 | 165 | 174 |
|---|---|---|---|---|---|---|
| Defect number | Chip coordinates | Defect coordinates | Sampling flag | Image name | Test result | Image classification |
| 1 | (2,0) | (ΔX1, ΔY1) | 0 | | G | G |
| 2 | (0,1) | (ΔX2, ΔY2) | 0 | | G | G |
| 3 | (1,1) | (ΔX3, ΔY3) | 1 | image3 | N | N |
| 4 | (2,1) | (ΔX4, ΔY4) | 1 | image4 | N | N |
| 5 | (0,2) | (ΔX5, ΔY5) | 0 | | G | G |
| 6 | (1,2) | (ΔX6, ΔY6) | 1 | image6 | G | G |
| 7 | (1,2) | (ΔX7, ΔY7) | 1 | image7 | G | G |
| 8 | (1,2) | (ΔX8, ΔY8) | 1 | image8 | G | G |
| 9 | (2,2) | (ΔX9, ΔY9) | ⓪ | image9 | N | N |
| 10 | (2,2) | (ΔX10, ΔY10) | 1 | image10 | N | N |
| 11 | (3,2) | (ΔX11, ΔY11) | 0 | | G | G |
| 12 | (1,3) | (ΔX12, ΔY12) | 0 | | N | N |

## Fig. 12



(a)

(b)

## Fig. 13

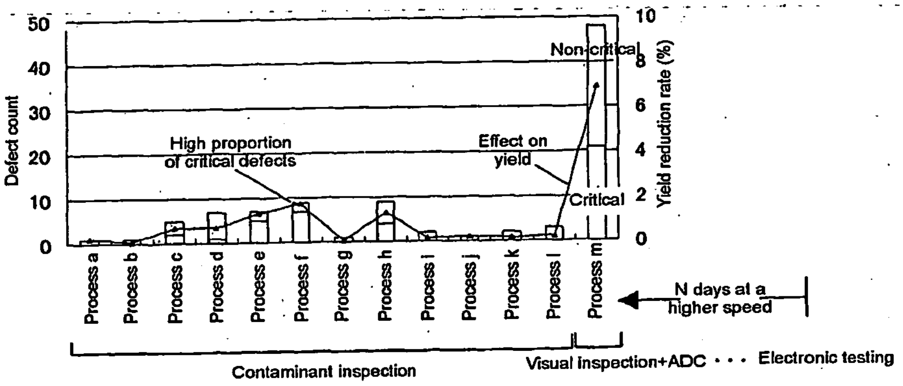


Fig. 14

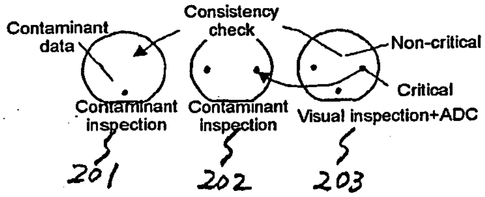
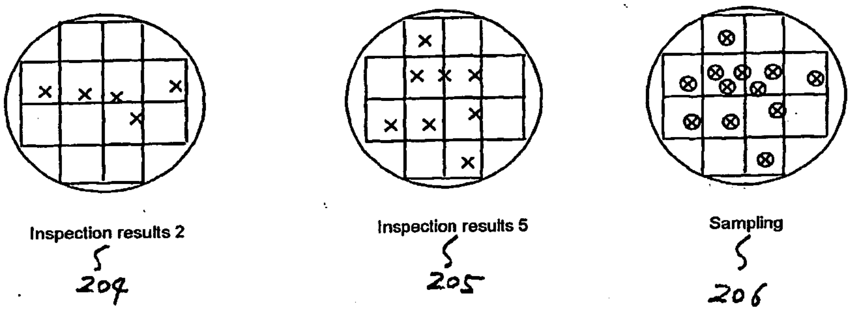

Contaminant data
Consistency check
Non-critical
Critical
Contaminant inspection
Contaminant inspection
Visual inspection+ADC
201
202
203

Fig. 15


Inspection results 2
204
Inspection results 5
205
Sampling
206